

Name:

Solutions

Please complete this packet while Mr. Davis is absent on Monday & Tuesday. Be good about working on this diligently during class and spend 30 minutes this evening (Monday evening). Factor each of these polynomials for the sake of PRACTICE and REPETITION. You may work with another student if you like.

1. $m^3 + 1 = (m+1)(m^2 - m + 1)$

2. $4m^2 + 8m + 12 = 4(m^2 + 2m + 3)$

3. $m^3 + 8n^3 = (m)^3 + (2n)^3 = (m+2n)(m^2 - 2mn + 4n^2)$

4. $m^2 - 121 = (m-11)(m+11)$

5. $wm - 8w = w(m-8)$

6. $7m^2 - 63m = 7m(m-9)$

7. $m^3 + 3m^2 + 16m + 48 = m^2(m+3) + 16(m+3) = (m+3)(m^2 + 16)$

8. $5m^4 - 30m^3 + 45m^2 = 5m^2(m^2 - 6m + 9) = 5m^2(m-3)(m-3) = 5m^2(m-3)^2$

$$9. 16m^2 + 24m + 9 = (4m+3)(4m+3) = (4m+3)^2$$

$$10. 5m^2 - 8m - 21 = (5m+7)(m-3)$$

$$\begin{aligned} 11. 9m^3 + 45m^2 - 4m - 20 &= 9m^2(m+5) - 4(m+5) \\ &= (m+5)(9m^2-4) \\ &= (m+5)(3m-2)(3m+2) \end{aligned}$$

$$12. m^4 + 10m^2 + 24 = (m^2+4)(m^2+6)$$

$$13. m^3 - n^3 = (m-n)(m^2 + mn + n^2)$$

$$14. m^2 + 36 = \text{DNF}$$

$$15. 5m^3 - 10m^2 - 120m = 5m(m^2 - 2m - 24) = 5m(m-6)(m+4)$$

$$16. 5m^2 - 17m - 12 = (5m+3)(m-4)$$

$$17. m^4 - 21m^2 - 100 = (m^2-25)(m^2+4) = (m+5)(m-5)(m^2+4)$$

$$18. m^4 - 29m^2 + 100 = (m^2 - 4)(m^2 - 25) = (m-2)(m+2)(m-5)(m+5)$$

$$19. m^3 + 3m^2 - 8m - 24 = m^2(m+3) - 8(m+3) = (m+3)(m^2 - 8)$$

$$20. m^2 - 12m + 36 = (m-6)(m-6) = (m-6)^2$$

$$21. 5m^3 - 45m = 5m(m^2 - 9) = 5m(m-3)(m+3)$$

$$22. 9m^2 - 16 = (3m-4)(3m+4)$$

$$23. 4m^2 + 9 = \text{DNF}$$

$$24. 3m^2 - 20m - 32 = \cancel{(3m+8)(m-4)} \\ = (3m+4)(m-8)$$

$$25. 6m^2 + 17m - 3 = \cancel{(3m+2)(2m-1)} \\ = (6m-1)(m+3)$$

$$26. 2m^2 + 32 = 2(m^2 + 16)$$

$$27. 8m^3 - 27n^3 = (2m)^3 - (3n)^3 = (2m - 3n)(4m^2 + 6mn + 9n^2)$$

$$28. m^4 + 5m^2 + 6 = (m^2 + 2)(m^2 + 3)$$

$$29. 9m^2 - 25 = (3m - 5)(3m + 5)$$

$$30. 9m^2 + 27m + 14 = (3m + 2)(3m + 7)$$

$$31. 4m^2 + 12m + 9 = (2m + 3)(2m + 3) = (2m + 3)^2$$

$$32. 5m^2 + 15m + 25 = 5(m^2 + 3m + 5)$$

$$33. m^2 + 6m + 7 = \text{DNF}$$

$$34. 6m^2 - 17m - 3 = (6m + 1)(m - 3)$$

$$35. 16m^2 - 16 = 16(m^2 - 1) = 16(m - 1)(m + 1)$$